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AMERICAN POTATO JOURNAL

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THE POTATO ASSOCIATION OF AMERICA

EAST LANSING, MICHIGAN

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Potato Seed Requirements for Southern Growers

J. W. WESTON, Baton Rouge, Louisiana

Experiments have been conducted by our experiment stations to determine the best sized seed piece to use and the proper spacing of this seed piece in order to obtain maximum results, other conditions being equal.

It is important that each seed piece produce a normal, healthy plant, setting a normal number of tubers that will develop into good number one potatoes, where competition between equally healthy plants is uniform. Uniformly grown and matured plants make the basis of a good grade and pack. The increased use of seed that is capable of producing a maximum number of healthy hills, properly spaced for the production of uniform sized tubers will make possible a better grade and more uniform product to meet the market requirements that consumers demand. We in Louisiana have been succeeding fairly well in improving methods of cultivation and fertilization, but so far have been able to secure only in a limited way sources of seed ideal for meeting our needs of uniformity for our market requirements.

I realize that already the seed potato improvement work that has been done and is being done in the various states has resulted in a great good to the potato growers generally.

Our colleges of agriculture, through their experiment stations and extension departments, are working to bring about more efficient production, so that it will be possible to lower cost per unit of production.

The colleges of agriculture in the various states producing seed potatoes have, through special boards, approved specifications for the standard requirements of certified seed potatoes. The boards that specify these rules and regulations also name the inspectors who inspect and pass on the fields entered for certification. The degree of perfection obtained in potato seed production in any given state, therefore depends on several factors, principally the knowledge of the fundamentals of potato seed requirements by the men in authority, the effectiveness of their methods in teaching growers these fundamentals and the rigid and strict enforcement of the regulations of the inspection service.

The apparent differences in the uniformity, type, and freedom from disease of the various sources of seed from such states is evidence that there is a lack of correlation in the factors above mentioned, or else we must credit the difference to natural climatic conditions of the sections where seed is grown. This makes the source of seed problem which confronts the Southern grower still a great one. The state of Louisiana, I am sure, is no worse off in this regard than any one of a great number of other states similarly located. The competition in the production of potatoes in the South for the early spring market is becoming more intense. The rivalry between producing sections is narrowing the margin of profit between the cost of production and the sale price.

Climatic and soil conditions have very extensively influenced the rate of production per acre. The efficiency methods of production being adopted through the use of cover crops, commercial fertilizers and cultural care of the crop are overcoming some of the hazards of climate.

Those sections having the natural advantages of climate, soil and proximity to markets will be in a position to remain in the business as long as the profits continue to exceed the cost. Just which commercial areas specializing in the production of potatoes for relatively long distance shipments will be dominant, is a question which remains to be answered. The price, uniformity, vitality and freedom of disease in the seed stock used will surely be an important factor in this contest.

We find sources of seed comparatively free of disease, particularly the degenerative diseases that affect yield, but still lack uniformity in tuber type, maturity and yielding ability. Other sources of seed, even certified, still continue to show too high a percentage of mosaic, spindle tuber, hay wire, witches' broom, or what have you, in the various diseases. The effects on the ultimate results are much the same.

The purchase of seed stock should be based on the past record of its performance, both in the North where it is grown for seed, and in the South where it is grown for consumption. At present we know of seed stocks, so tested that produce a uniform crop, make a large yield of fine appearing stock of good type tubers. Probably the real reason for differences in selected certified state inspected seed is that the human element, assisted by natural conditions, can and does exert a very real influence on the uniformity of the product selected. I think it is agreed that tuber unit or hill-unit selection is the best means of seed improvement with our present varieties. This process of selection eliminates the disease and the variables from normal type plants in the variety and makes it possible for the grower to make a very uniform product of the best. By increasing these selections and using them in general planting, it has resulted in providing the seed grower with a seed crop which needs little rogueing and produces an increased yield without added expense. It has provided the Southern grower with a very superior product that produces maximum yields for money invested.

Those favorable sections so situated in the South as to be in a position to secure such sources of seed should be the dominant factors in the production of the early potato crop.

CONCLUSION

As a means of improving the various sources of certified Bliss Triumph seed potatoes quite generally used in the general Southern states, I would suggest:

1. The testing of the strains, being recommended by the various certification authorities for certification in their home states, at some central point in the South, by a disinterested party, such as the Federal Substation at Houma, Louisiana.

2. A further effort of coordination on specifications on the part of the certification officials and supervising inspectors by sectional group meetings and inspection tours be made for the study of disease and plant character in the states producing Bliss Triumphs or other seed potatoes.

3. The encouragement of a uniform seed law prohibiting the use of the word "certified" on other than state inspected seed.

An Interesting Letter

DONALD REDDICK, Cornell University

It is well known that the Rev. Chauncey E. Goodrich originated many varieties of potatoes in his efforts of nearly 20 years to overcome a disease of potatoes which is now commonly known as blight but which in his day was called "the disease." It is also known that a good many of the Goodrich varieties were introduced by Mr. D. S. Heffron. Very recently there has come to light an interesting letter in which the conditions of transfer of these varieties to Mr. Heffron are mentioned. This letter was written by the Reverend Goodrich just three months before his death and at a time when most of his writing was done from a bed of sickness. The letter was found by Cora Heffron Murray, youngest daughter of D. S. Heffron and is now preserved in the library of Cornell University. The following is a faithful reproduction of the letter, every word of which is clearly legible.

Utica Feb 11th 1864.

Mr. D. S. Heffron.

In addition to all that I said to you, when here, some weeks ago, I have now *an offer* to make you

1. I have 10. varieties, (probably all very hardy) of seedlings of 1862, all from the Garnet Chili and Pink Eye Rusty Coat. They are handsome, but none of them early—about three tubers each enough for six hills.

2. I have about 133. seedlings of 1863. They are all from the hills of early sorts, and will I hope result in giving many valuable new early sorts. They consist of 5 families—

1. The Early Sovereign—probably an English sort, a very pretty, but not very hardy sort—Here I have 13. varieties.

2. No. 1 of my Lima seedlings of 1859.—the parent beautiful but only moderately hardy. Here are 22. varieties.

3. No. 92 of the same family. The parent was a very fine table sort and very shapely, but was badly diseased this year. Here are 21. sorts.

No. 4. No. 310 of 1360, a beautiful early and very productive sort, but considerably diseased the last year. Here are 23. sorts.

4. No. 310 of 1860, a beautiful early and very productive sort, but are 56. sorts.

Remarks 1. All the parents were white except No. 3. family which was tawny.

2. In examining them the first of this month one variety each in the 2nd and 3rd families, was found diseased. These taken out leaves the total 133.

4th [sic] Contrary to my early practice I pulled up and threw away, during the summer every plant whose look and growth I did not like. This saved me much work of selection at the fall digging, and accounts for their good appearance at mid-winter after such a season as 1863 was

5th The families are put in separate boxes marked 1863, each sort in a newspaper alone, and usually from 3 to 5 tubers each, although 3 will be as many as it will be useful to plant of each

My Offer.

I will make over these seedlings of 1862 and 3. to you to finish their test culture through the next four years. You shall have the *whole pecuniary* advantage of any future sales of them. Nay, if I live I will give you some aid in their culture and fall selection. I will also furnish you with cedar field marker for each sort. Those of 1863 would be ready for market in 1868. they being then five years old.

Extent of ground needed	hills.
1862 10. sorts 6 hills of each	60.
1863 133. sorts 3 hills of each	399.
	460.

This at 3 x 3 would require almost 1/10. of an acre of ground the first year. You may probably discard 1/3. to 1/2. the sorts next fall (as I have usually done). One fourth of an acre to 1/2. might be required the next year after.

Should you think favorably of this offer come and see me and the potatoes also soon, and also about other matters.

Truly yours
Chauncey E. Goodrich

Wheel Damage to Potatoes With Large Sprayers On Muck Soils

C. L. FITCH, Ames, Iowa

We had available in 1931, in Cerro Gordo county and in Wright county, Iowa, two good fields of Cobblers, planted early, with upwards of 20 bushels of seed per acre, and sprayed with large sprayers; and in these fields we took careful weights to determine the actual damage from the wheels.

The Cerro Gordo county field was deep peaty muck, and the Wright county field shallow peaty muck. Wheels settled considerably in each soil, and about the same.

The Cerro Gordo field had been fertilized twice before and received about 600 pounds 0-8-72 in 1931. The Wright county field had not been fertilized before 1931, and received 500 pounds of 0-9-27 in 1931.

In the Cerro Gordo county field, the spacing was 36 inches and a tractor was used which had a double central front wheel. The extended width drive wheels straddled two rows, but hugged these rows too closely. The sprayer was an 8-row 24-nozzle power takeoff machine. Its two wheels centered the middles pretty well. The field was sprayed with bordo about every seven days for 11 times, ceasing only when on August 27 the vines were completely destroyed by hail. About 20 bushels per acre of potatoes uncovered by the storm were picked up the next day. Rather more of these uncovered tubers probably came from the straddled rows than from other rows. The seed was first home peat grown crop from good Red River valley seed. The tractor was equipped with cow catcher style of sheet steel vine guards. The capacity of tank was 300 gallons. The weight of the tractor was about 3,800 pounds, of the sprayer empty about 2400 pounds, and filed about 4800 pounds. Vines interlaced across row very well.

In the Wright county field, the twin rows straddled were 32 inches and the space between pairs was 38 inches, so that the average spacing was 36 inches. The sprayer had 30 nozzles and covered 10 rows. It was mounted on a Chevrolet truck having three tandem wheels on each side, equipped with one balloon tire each. The truck tread was 54 inches, and the clearance each side of the straddled twin rows was 11 inches between centers when truly aligned. The field was sprayed four times with this outfit. Then after hilling, the clearance was not sufficient for the truck axles, and for the fifth time a tractor with wheels well centered, was used, and the sprayer was drawn on a trailer, made from the rear wheels of a manure spreader. The empty truck weighed about 3700 pounds. The sprayer and boom weighed 2300 pounds, and with its capacity of 300 gallons 4700. The tractor tread was 80 inches and the trailer tread 72 inches. On the tractor and trailer vine lifters of the rake tooth type but heavier were used with pretty good satisfaction. Vines were not very large, but interlaced across all rows, when at their best.

The length of each row weighed on each field was 435 feet or 3/100 acre. On the Cerro Gordo county field, duplicate weights each as above, i. e. on 870 feet of row, were taken on the straddled row, the straddling rows, and on rows sprayed but not bordered nor touched by wheels. On the Wright county field weights were taken in quadruplicate of the above, or 1740 feet of each type of row.

On the Cerro Gordo county field, we weighed 255 bushels per acre from rows not bordered by wheels; 239 bushels from the straddling rows, and 170 bushels from the straddled and centered pairs of rows. The average wheel damage on the field at the place of testing was 28 bushels per acre, in 11 sprayings.

On the Wright county field, we weighed 257 bushels per acre

from rows not bordered by wheels, 228 bushels from straddling row, and 207 bushels from straddled rows. The average wheel damage on the field at the place of testing was 16 bushels per acre, in five sprayings.

It was evident, that with two and four row sprayers, horse drawn and without vine lifters, the entire benefit from bordo spraying could be eliminated all too easily, but on that we do not have exact figures to present.

All wheels should tread centers if possible. The best vine lifters are not too good. Knowledge and judgment are needed to spray to and not beyond the number of sprays which pay best.

Crop and Market News

PRODUCTION FIGURES REDUCED

(Contribution from the Bureau of Agricultural Economics)

The potato crop harvested this year is estimated at 376,248,000 bushels, compared with an estimated crop of 333,210,000 bushels last year and 329,134,000 in 1929. These estimates have been adjusted approximately to the 1930 census basis for the crop year 1929. The revised estimate of 1931 acreage is 3,382,000 acres, which is 11% greater than that of 1930 and nearly 14% more than the 2,978,000 acres estimated for 1929. Acreage and production revisions for earlier years have not been completed, so that it is impossible at this time to present proper comparison with crops prior to that of 1929.

Yields of late-crop potatoes this year were found to be somewhat heavier than were reported early in November and the crop is now estimated to have been 13% larger than that of 1930. Placing a value on late potatoes at prevailing December 1 farm prices, and early potatoes at a seasonal average price, this year's crop is valued at only $161,264,000, which is 45% less than the 1930 crop value and 62% below that of 1929. The December 1 value of this year's crop is about the lowest in a quarter of a century. The present average of December prices is less than half the price a year ago, only one-third of the December average of two years ago, and the lowest recorded since 1900.

The department's revised estimates of potato production are lower than those previously issued, due chiefly to adjustment of the estimates of most states practically to the level of production indicated by the census. The 1930 production estimate, which was partially adjusted to the census in July, 1931, has

been further reduced by 3%. The 1929 production estimate, which was not included in the preliminary revisions published in July, has been lowered by about 8%.

Except in certain commercial areas where the estimates are based on shipments, sales and other reliable indications of crop disposal, the present revision discontinues previous allowances for difficulties encountered in enumerating the small patches, that form a considerable part of the supply in certain localities, and for the tendency of farmers in some areas to calculate production from sales instead of from field-run measure commonly used in computing yields per acre at harvest time. The revision to a census basis has not greatly affected the relationship between 1929 and 1930 production. The 1930 and 1931 relationship has been changed only to the extent that this season's yields are found to vary from those reported in November.

The revised figures by groups of states are presented below:

White Potatoes: Surplus Late, Deficient Late and Southern Groups, 1930-1931.

	Acreage		Yield		Production*	
	1930	1931	1930	1931	1930	1931
	1000 Acres		Bus. per Acre		1000 Bushels	
United States	3,038	3,382	109.7	111.3	333,210	376,248
35 Late States	2,648	2,911	113.4	115.1	300,401	334,990
19 Surplus Late	1,979	2,185	117.9	120.8	233,260	264,020
4 Eastern	585	606	152.7	179.4	89,044	108,743
6 Central	1,036	1,178	72.0	80.6	74,627	94,962
9 Western	360	401	193.3	150.4	69,589	60,315
16 Deficient Late	669	726	100.4	97.8	67,141	70,970
8 Eastern	221	232	134.7	134.6	29,760	31,221
8 Central	448	494	83.4	80.5	37,381	39,749
13 Southern	390	471	84.1	67.6	32,809	41,258

*Total production, including early and late potatoes.

By December 20, the 19 important shipping states had forwarded approximattly 72,500 cars of potatoes, or nearly one-fifth less than movement to the same time last season. The only late states exceeding last year's corresponding figures to that date were Michigan, North Dakota, and Wisconsin. Maine was running 5,000 cars behind its record of the early part of 1930-31 season, and Idaho lacked 1,700 cars of equaling its movement to mid-December of 1930. Colorado had marketed only 3,750 cars, as against 9,565 a year ago. Total forwardings of potatoes had

dropped to a low figure during the dull period prior to Christmas. The daily average was only 400 cars.

Some changes occurred in the price situation during last November and early December. F. O. B. prices in the east were about the same as the month before, but a lower level than during mid-November prevailed in the north central region, in Nebraska and in Colorado. Prices ruled higher than the preceding month in Idaho and Washington. Western New York f. o. b. prices on sacked Round Whites in mid-December were 65c-69c per 100 pounds, but northern Maine held steady on Green Mountains at 43c. The north central states quoted a lower range of 52c-55c per 100 pounds. Western Nebraska reported Bliss Triumphs at 45c. The cash-track price on two varieties in southern Colorado was 50c-65c, but northern Colorado quoted sales on a usual-terms basis at 57c-60c. Best Russet Burbanks returned 65c-70c in southern Idaho. Yakima Valley of Washington shippers got $16 per ton.

The Chicago carlot market reported spot sales of northern Round Whites at 75c-85c, with Red River Ohios around $1 per 100 pounds. Idaho Russet Burbanks ruled firmly at $1.45-$1.55 and Nebraska Triumphs at $1-$1.13. The asking price on January "futures" was $1.58 for Idaho Russets, 96c for Round Whites, and 92c for Maine Green Mountains. "Futures" for March delivery were at a level about 10c above that for January sales. Eastern jobbing centers quoted Maine Green Mountains at 80c-$1.25 per 100 pounds, with Long Island Green Mountains at $1.10-$1.25 and New York Round Whites at 90c-$1.55. A few sales of new-crop Triumphs from southern Texas ranged $1.35-$1.65 per 100-pound sack.

Tabb Potato Service Bulletin No. 293

After holding several meetings over the state, Governor Ross of Idaho and State Commissioner of Agriculture F. Lee Johnson, have announced an "Idaho Special" pack of potatoes for use during the remainder of the season, which they hope will enable the growers and dealers to sell the present crop to a better advantage than when sorted as straight U. S. Ones and U. S. Twos. This Idaho Special pack is to consist of a mixture of 80% or more U. S. No. 1 Russet potatoes, of a minimum size of six ounces, and 20% or less of No. 2 Russets sorted to a ten ounce minimum.

The large No. 2 potatoes in this pack are supposed to be af-

fected by only minor blemishes and not to contain any clipped ends. The packs will be branded on each sack, showing exactly the contents, and the potatoes are to be approved by the Federal-States inspectors. The Idaho officials are hoping that such a pack will bring a higher price than the present No. 1 grade, and at the same time utilize the best and largest of the No. 2's. According to the Idaho Falls papers, quite a number of the dealers there are opposed to this new grade and consider it impractical from a marketing standpoint. It is certain that for the time being, at least, it will be difficult if not impossible for the Idaho shippers to make f. o. b. sales on such a special and unknown grade. Most of the dealers that we have consulted in Chicago agree with the Idaho shippers, in that no benefit will be derived from this innovation. The general opinion at this end is that if the Idaho authorities really wish to do something worth while, they should take some steps toward keeping a large percentage of the No. 2 grades that are now coming to market at home.

Maine Farmers Union. Several weeks ago on page 4, Bulletin 285, we mentioned a series of meetings being held in Aroostook county, Maine, for the purpose of organizing the farmers into a cooperative union to be known as the United Potato Growers of Maine. The idea back of the movement was to prevent ruinous competition between the farmers themselves in selling their crops, and the principal clause in the constitution was that the board of directors should from time to time fix the minimum price at which the union members should sell their potatoes.

We are advised today that the Union has been steadily plugging away and that a final meeting was held on Monday, January 4, at Mars Hill, where the organization was completed, permanent officers elected and a price fixing committee selected. Complete arrangements are supposed to be made to put the minimum price idea into effect immediately. The committee agreed upon a price that afternoon which was effective Tuesday morning, January 5, and all members of the Union will be obligated to not offer for sale or sell for a lesser price.

Originally the sponsors of this movement demanded 80% of the growers in Aroostook county before the organization would be attempted, and they have made considerable progress. The experiment will, indeed, be an interesting one to watch. The one certain thing is that they have most everything to gain and little to lose this season. Should the board of directors be reasonable in their price ideas, and if their members will stick, a considerable amount of good might be done under the peculiarly depressed conditions now prevailing in the Maine potato industry.

Chicago Mercantile Exchange

Trading in potato futures on the Chicago Mercantile Exchange during 1931 did not prove as active as had been hoped. A total of 5,541 cars was sold during the year, but it is believed that in a better year the trading will prove far more active.

The past year is recorded as one of the worst ever experienced by the potato industry. The lack of buying power in the general public resulted in a very poor demand. Although the crop was larger than 1930, the supplies were not as great as has been recorded in several years prior to 1931. Still, stocks did not move.

The lack of optimism in the future failed to attract many buyers in the futures. The prices of the future deliveries held above the spot market levels without exception until the delivery month was reached, however, which meant that hedging operations could and did proceed at a fairly profitable rate.

Many potato men hoped for price turns for the better and did not hedge their stock as actively as would have been the case had the futures held to still higher levels. As it turned out, however, the futures even at the low levels they maintained, were too high, being forced to decline to lower levels each time a delivery month was reached, falling to the spot market prices.

Following is the price range of the various deliveries:

	Open	High	Low	Close
Idaho Russet Standards				
March	$2.00	$2.00	$1.55	$1.57
April	1.75	2.00	1.58	1.58
October	1.70	1.70	1.20	1.25
Round White Standards				
October	1.35	1.35	.72	.75
Maine Green Mountain Standards				
October	1.08	1.28	.73	.80

Notes

PENNSYLVANIA FARM SHOW

The 16th annual Pennsylvania Farm Show will be held at Harrisburg, January 18, 19, 20, 21, 22, 1932.

This show is held in the new ten-acre, $1,500,000 structure erected especially to house this show which has grown into tremendous proportions.

Last year over 7,300 entries were made in 21 departments of the show and a record attendance of 255,000 was established. The cash awards for the coming show will total $37,819.00. Of this amount, $743.00 will be awarded to the potato growers for the most outstanding potato exhibits.

The state has been divided into four districts, according to the development of the potato industry and also with reference to climate. Only White Rural and Russet Rurals are included in these four districts with each of these two varieties competing in separate classes. Other varieties compete in state-wide classes. In the state-wide sweepstakes class only the White Rural and Russet Rural are eligible.

An outstanding feature of the potato exhibits will be the state-wide commercial class of 110 tubers. There will be $116.00 in awards distributed in this class. This class at the last show attracted considerable interest because of the excellent quality and the large number of entries.

Judges for the potato show are Dr. E. V. Hardenburg, Ithaca, New York and Dr. C. F. Noll,, State College, Pennsylvania.

—K. W. LAUER.

NORTH DAKOTA

Growers of certified seed potatoes in Northwestern North Dakota, growing the Bliss Triumph variety, which is in demand for seed by the growers in the southern states, are located very favorably, being north of latitude 47° they are just far enough north so that they can get the vigor that is desired in seed potatoes, and being west of longitude 101°, they are just far enough west so as to get the western high-altitude dry-land conditions which are conducive to the production of healthy disease-free seed.

Fifty-eight growers of certified seed potatoes in this section have evidenced their faith in the possibilities for next year and are determined to stick to the growing of certified seed in spite of the drouth, which has caused low yields. All have saved as much seed as it was possible to get. Many fields averaged as low as three bushels to the acre, whereas, other fields averaged as high as sixty-five bushels, and one grower claims a yield of one-hundred and fifteen bushels to the acre.

The growers of this northwestern section, "North of 47° and West of 101°" in 1931 planted a total of 1448 acres of seed potatoes, which is about 75% of the total Bliss Triumph certified seed acreage in the state.

Another fact which exemplifies the faith that the growers have is that every grower next year will have a tuber unit seed plot. These seed plots will range from three to thirty acres in size. A few of the growers will be producing their total acreage

of both seed plot and commercial fields by the tuber unit method.

One of the big advantages that the growers in the high-altitude dry-land sections have over other sections is the fact that insects are considerably less prevalent. There are practically no aphids, leaf-hoppers or flea beetles to aid in the transmission of diseases, and it is seldom that it is even necessary to spray the plants for the control of the potato bugs.

This is the time for the growers "North of 47° and West of 101°" desiring to raise certified seed potatoes, to get into the game. There were many growers, who last year did not certify their potatoes because of the fact that the prospective conditions were not satisfactory. If such growers are interested in getting into the certified seed production again, they should apply immediately so that arrangements can be made to have their seed tubers indexed, and seed plot inspected during the coming season.

Growers in the Northwestern North Dakota section interested in any certified seed work, either on potatoes, cereals or legumes, should get in touch with the branch office of the State Seed Department, which is located in Room 3 of the Court House in Minot.

—A. W. AAMODT.

COLORADO

El Paso county growers will play a most important part in the activities of the Colorado Certified Potato Growers' association the coming year, the organization's two most important offices going to local men.

George H. Webster of Black Forest, northeast of Colorado Springs, one of Colorado's most prominent Bliss Triumph growers, was elected president at the association's annual meeting recently in conjunction with the annual Colorado Pure Seed show. George Higginson II, who, though a resident of Black Forest but during the past year, already is a leading spud man, was chosen secretary-treasurer. Thus the certified spud program for Colorado will be directed from this area.

Chester Brown of Cortez was elected vice-president. Other members of the board include John J. Sherman of Craig, representing northwestern Colorado, and D. J. Harmon of Sterling, representing the northeastern area.

Many important steps were taken by the association at its annual meeting, one of which will be the formation of local associations throughout Colorado as units in the state organization. As a result, both the Black Forest and Teller county spud producing sections of this region will see the formation of locals in the not far distant future.

Decision was reached to start a quartely publication devoted to the interests of certified potato seed growers and containing news notes from the certified producers. The purpose of the

publication is to bring growers closer together and to perfect a spirit of co-operation. A new program on tuber indexing of seed stock was outlined.

Policies of the association the coming year will be formulated by the growers, who will be sent questionnaires by Secretary-Treasurer Higginson.

Certified potato seed growers are enthusiastic over the outlook for the industry in Colorado. This year's spud show, with 201 samples at the Colorado Pure Seed show, was one of the finest since the show's inception 10 years ago, according to Carl Metzger, assistant state horticulturist at the Colorado Agricultural college.

In progress of the certified spud industry of Colorado, El Paso and Teller counties will play no unimportant role.

—COLORADO SPRINGS FARMER.

Review of Recent Literature

Werner, H O. The Cause and Prevention of Mechanical Injuries to Potatoes. Nebraska Exp. Sta. Bul. 260:1-35. August 1931.

Many factors contribute to mechanical injury of potato tubers at harvest time. The most important of these discussed by the author are soil condition, degree of maturity, length of time tubers are exposed to drying before picking, size of tubers, and methods of harvesting, handling and storage.

In 1928, cracking was less but bruising was greater in the hard dry soils than in those made wet by recent rains. This difference was probably due to the greater amount of dirt carried when harvesting from the wetter soils. The percentage of potatoes cracked or cut in digging increased with the degree of immaturity, as caused by late planting. The influence of time of exposure of tubers to drying before picking on account of cracking was tested by dropping a 3.5 ounce iron rod from a height of 9½ inches on tubers exposed various lengths of time. Tubers exposed only 30 minutes cracked 83% while of those exposed five hours only 22% cracked. The percentage of cracked potatoes increased as the size of tuber increased. The dropping of tubers onto digger chain rods in the digging process was found to be a common cause of injury. A single layer of burlap covering over these rods was not nearly as effective in reducing injury as a thin layer of dirt. Burlap lined wire mesh baskets for picking up potatoes are recommended. Wooden slatted crates are recommended for hauling to storage as they result in least bruising in handling. Treating the surface of bruised tubers with formadahyde to prevent rot was not effective.

—E. V. HARDENBURG.